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EXAMINER

CHAUHAN, ULKA J

ART UNIT	PAPER NUMBER
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2676

DATE MAILED: 07/27/2004

#15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/536,275

Applicant(s)

WANG, ARTHUR W. 

Examiner

David Q Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 May 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
4a) Of the above claim(s) 22 and 24 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-21, 23 and 25-34 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 05/26/04 have been fully considered but they are not persuasive.

In response to Applicant's Remark on page 8, Applicants argue that Applicant can find no teaching or suggestion of variable beam widths in Castiel reference.

Examiner respectfully **disagrees** because Castiel reference discloses a beam former drives a transmit, steerable phased-array antenna which transmits a signal in a current geo frequency band to antenna in the remote user terminal (see paragraph 0068). In satellite communication, a beam former driving a transmit, steerable phased-array antenna being an antenna with a variable beamwidth is well known in the art (see Anderson et al., US 5117240 col. 1, lines 55-57). Therefore, Castiel reference discloses satellite generating a plurality of beams with variable beam widths.

In response to Applicant's Remark on page 9, Applicants argue that in the Castiel reference, the satellites are not stationary in their orbits.

Examiner agrees with Applicants. However, Applicant's system comprises a plurality of satellites located in an elliptical sub-geosynchronous orbit as claimed in claim 1. Applicant never mentions that the satellites are stationary in their orbits in the claim. The Castiel reference discloses a plurality of satellites located in an elliptical sub-geosynchronous orbit as claimed in claim 1 (see paragraph 0003). Therefore, Examiner believes that the Castiel reference discloses all limitations as claimed in claim 1.

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In response to Applicant's Remark on page 9, Applicants argue: "the Castiel reference teaches satellites are similar to geosynchronous satellites. This implies that the beams are not changed since fixed beams are used in geostationary applications."

Examiner respectfully **disagrees**. **Applicants do not explain clearly why** the beams are not changed since fixed beams are used in geostationary applications.

As mentioned and explained above, Castiel reference discloses satellites are similar to geosynchronous satellites and satellites generating a plurality of beams with variable beam widths.

In response to Applicant's Remark on page 9, Applicants argue: "Because the Taormina reference also does not describe variable beam widths."

Examiner respectfully **agrees**. **However**, the Taormina reference combined with the Castiel reference discloses the plurality of beams providing equal capacity density to the cell size as claimed in claim 4 and 14 (see fig. 6, col. 5, lines 6667; col. 6, lines 1-5).

In response to Applicant's Remark on page 10, Applicants argue: "the Schloemer reference does not teach disabling a satellite when coextensive with a geostationary orbit."

Examiner disagrees. Examiner believes that the Schloemer reference does not teach disabling a satellite when coextensive with a geostationary orbit (see col. 2, lines 45-50 of Schloemer).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1,3,6-7,9-13,17,19-21,23,25-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Castiel et al. (US 2002/0160710).

Regarding claim 1, Castiel et al disclose a communications system comprising: a plurality of regional ground stations (fig. 1; col. 4, paragraph 0062); a plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see fig. 1; paragraphs 0003 and 0004; paragraph 0143); said satellite generating a plurality of beams with variable beam widths to obtain a substantially uniform cell size covering said service area (see fig. 1; paragraphs 0003 and 0004; paragraph 0062 and 0068); and a plurality of user terminals within the service area receiving communication signals from satellite (see fig. 1 and paragraph 0004).

Regarding claim 12, Castiel et al disclose a communications system comprising:

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a first plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area (see explanation in claim 1); said satellites generating a plurality of beams with variable beamwidth to obtain a substantially uniform cell size covering said service area (see explanation in claim 1); said first plurality of satellites providing a first system capacity (see fig. 4g); and a second plurality of satellites deployed after said first plurality of satellites, said second plurality of satellites providing a second system capacity greater than the first system capacity (see fig. 4g).

Regarding claim 25, Castiel et al disclose a method of developing a customized satellite constellation comprising the step of: developing a first satellite constellation having a first set of satellites having regional coverage having a first service area, wherein said first constellation comprises a first plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a synchronized manner to provide continuous coverage to said service area; said satellites generating a plurality of beams with variable beam widths formed as a function of orbit position to obtain a substantially uniform cell size covering said service area (see explanation in claim 1 and 12); launching a second set of satellite to form a second satellite constellation having primary market coverage in cooperation with said first set of satellites to have a second service area greater than said first service area (see explanation in claims 1 and 12; see fig. 4g).

Regarding claim 32, Castiel et al disclose a communications system comprising:
a plurality of regional ground stations; a plurality of satellites located in an elliptical sub-geosynchronous orbit with respect to the earth, said satellites operating in a service area in a

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synchronized manner to provide continuous coverage to said service area, said satellites generating a plurality of beams with variable beam widths that vary as a function of orbital position to obtain a substantially uniform cell size covering said service area; and a plurality of user terminals with the service area receiving communication signals from the satellite (see explanation in claim 1).

Regarding claims 3 and 13, the communications system of Castiel et al also discloses that the uniform cells are substantially fixed within the service area (see paragraphs 0003 and 0004).

Regarding claim 6, the communications system of Castiel et al also discloses that within said service area is a primary market area (see fig. 7's).

Regarding claims 7 and 17, the communications system of Castiel et al also discloses that the plurality of satellites comprises a phase array to form said plurality of beams (see paragraph 0068).

Regarding claims 9-11 and 19-21, the communications system of Castiel et al also discloses that the plurality comprises less than 9 satellites; and the plurality comprises 4 satellites, 5 satellites; and said first plurality comprises less than 9 satellites; and the plurality comprises 4 satellites, 5 satellites (see paragraph 0104 and fig. 4g).

Regarding claim 23, the communications system of Castiel et al also discloses wherein said orbits is inclined eccentric sub-geosynchronous orbit (see fig. 4g).

Regarding claims 26 and 27, the method of Castiel et al also discloses launching a third set of satellites to form a third satellite constellation having optimized landmass coverage in cooperation with said first set of satellites and said second; the first constellation, the second

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constellation and the third constellation comprise SGSO satellites (see explanation in claim 25, fig. 4g).

Regarding claims 28-31, the method of Castiel et al also discloses the first and second set of satellites are non-interfering with GSO satellites; the first plurality of satellites and the second set of satellites have active arcs sized to provide continuous coverage to said second service area and be non-interfering with GSO satellites (see paragraphs 0030-0032)

Regarding claim 33, the communications system also discloses wherein said plurality of satellites operate using a frequency of GSO satellite; (see paragraph 0098 and 101); wherein said plurality of satellite do not operate in GSO satellite avoidance zone (see col. 4, lines 46-55).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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3. Claims 4-5 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Taormina et al. (US patent Number 6257526).

Regarding claims 4 and 14, the communications system of Castiel et al does not disclose the plurality of beams providing equal capacity density to the cell size. However, Taormina et al disclose the plurality of beams providing equal capacity density to the cell size (see fig. 6; col. 5, lines 66-67; col. 6, lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Taormina to the system in order to provide a desired level of coverage.

Regarding claims 5 and 15, the communications system of Castiel et al does not disclose wherein said sub-geosynchronous orbit has a minimum elevation angle is greater than 10 degrees in the service area. However, Taormina et al. disclose wherein said sub-geosynchronous orbit has a minimum elevation angle is greater than 10 degrees in the service area (see col. 6, lines 25-27). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Taormina to the system in order to prevent rotation of the line of apsides.

4. Claims 8 and 18 rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Schloemer (US Patent Number RE37140).

Regarding claims 8 and 18, the communications system of Castiel et al does not disclose wherein said first plurality of satellites are disabled when coextensive with a geostationary orbit. However, Schloemer discloses wherein said first plurality of satellites are disabled when coextensive with a geostationary orbit (see col. 2, lines 45-50). Therefore, it would have been

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obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Schloemer to the system in order to keep satellites in their proper orbits.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Byrne et al. (US Patent Number 5990883).

Regarding claim 2, the communications system of Castiel et al does not disclose the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet. However, Bryne discloses the ground station coupled to one selected from the group consisting of an internet service provider, a broadcast television center and a corporate internet (see fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Bryne to the system in order to provide multimedia program content to users.

6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Castiel et al (US 2002/0160710 A1) in view of Wainfan et al. (US Patent Number 6339707).

Regarding claim 16, the communications system of Castiel et al does not disclose a primary market area having an elevation greater than thirty degrees. However, Wainfan discloses a primary market area having an elevation greater than thirty degrees (see col. 3, lines 62-63). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above teaching of Wainfan to the system so that satellite service may be more efficiently realized.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Q Nguyen whose telephone number is 703-605-4254. The examiner can normally be reached on 8:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on 703-308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN

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